

Figure 1. The effect of the concentration of the *Agrobacterium* suspension on the transformation efficiency of *Agrobacterium* strains. The concentration of the *Agrobacterium* suspension was 10⁶ cells/ml (a), 10⁷ cells/ml (b), 10⁸ cells/ml (c), 10⁹ cells/ml (d), 10¹⁰ cells/ml (e), 10¹¹ cells/ml (f), 10¹² cells/ml (g), 10¹³ cells/ml (h), 10¹⁴ cells/ml (i), 10¹⁵ cells/ml (j), 10¹⁶ cells/ml (k), 10¹⁷ cells/ml (l), 10¹⁸ cells/ml (m), 10¹⁹ cells/ml (n), 10²⁰ cells/ml (o), 10²¹ cells/ml (p), 10²² cells/ml (q), 10²³ cells/ml (r), 10²⁴ cells/ml (s), 10²⁵ cells/ml (t), 10²⁶ cells/ml (u), 10²⁷ cells/ml (v), 10²⁸ cells/ml (w), 10²⁹ cells/ml (x), 10³⁰ cells/ml (y), 10³¹ cells/ml (z), 10³² cells/ml (aa), 10³³ cells/ml (ab), 10³⁴ cells/ml (ac), 10³⁵ cells/ml (ad), 10³⁶ cells/ml (ae), 10³⁷ cells/ml (af), 10³⁸ cells/ml (ag), 10³⁹ cells/ml (ah), 10⁴⁰ cells/ml (ai), 10⁴¹ cells/ml (aj), 10⁴² cells/ml (ak), 10⁴³ cells/ml (al), 10⁴⁴ cells/ml (am), 10⁴⁵ cells/ml (an), 10⁴⁶ cells/ml (ao), 10⁴⁷ cells/ml (ap), 10⁴⁸ cells/ml (aq), 10⁴⁹ cells/ml (ar), 10⁵⁰ cells/ml (as), 10⁵¹ cells/ml (at), 10⁵² cells/ml (au), 10⁵³ cells/ml (av), 10⁵⁴ cells/ml (aw), 10⁵⁵ cells/ml (ax), 10⁵⁶ cells/ml (ay), 10⁵⁷ cells/ml (az), 10⁵⁸ cells/ml (ba), 10⁵⁹ cells/ml (bb), 10⁶⁰ cells/ml (bc), 10⁶¹ cells/ml (bd), 10⁶² cells/ml (be), 10⁶³ cells/ml (bf), 10⁶⁴ cells/ml (bg), 10⁶⁵ cells/ml (bh), 10⁶⁶ cells/ml (bi), 10⁶⁷ cells/ml (bj), 10⁶⁸ cells/ml (bk), 10⁶⁹ cells/ml (bl), 10⁷⁰ cells/ml (bm), 10⁷¹ cells/ml (bn), 10⁷² cells/ml (bo), 10⁷³ cells/ml (bp), 10⁷⁴ cells/ml (bq), 10⁷⁵ cells/ml (br), 10⁷⁶ cells/ml (bs), 10⁷⁷ cells/ml (bt), 10⁷⁸ cells/ml (bu), 10⁷⁹ cells/ml (bv), 10⁸⁰ cells/ml (bw), 10⁸¹ cells/ml (bx), 10⁸² cells/ml (by), 10⁸³ cells/ml (bz), 10⁸⁴ cells/ml (ca), 10⁸⁵ cells/ml (cb), 10⁸⁶ cells/ml (cc), 10⁸⁷ cells/ml (cd), 10⁸⁸ cells/ml (ce), 10⁸⁹ cells/ml (cf), 10⁹⁰ cells/ml (cg), 10⁹¹ cells/ml (ch), 10⁹² cells/ml (ci), 10⁹³ cells/ml (cj), 10⁹⁴ cells/ml (ck), 10⁹⁵ cells/ml (cl), 10⁹⁶ cells/ml (cm), 10⁹⁷ cells/ml (cn), 10⁹⁸ cells/ml (co), 10⁹⁹ cells/ml (cp), 10¹⁰⁰ cells/ml (cq), 10¹⁰¹ cells/ml (cr), 10¹⁰² cells/ml (cs), 10¹⁰³ cells/ml (ct), 10¹⁰⁴ cells/ml (cu), 10¹⁰⁵ cells/ml (cv), 10¹⁰⁶ cells/ml (cw), 10¹⁰⁷ cells/ml (cx), 10¹⁰⁸ cells/ml (cy), 10¹⁰⁹ cells/ml (cz), 10¹¹⁰ cells/ml (da), 10¹¹¹ cells/ml (db), 10¹¹² cells/ml (dc), 10¹¹³ cells/ml (dd), 10¹¹⁴ cells/ml (de), 10¹¹⁵ cells/ml (df), 10¹¹⁶ cells/ml (dg), 10¹¹⁷ cells/ml (dh), 10¹¹⁸ cells/ml (di), 10¹¹⁹ cells/ml (dj), 10¹²⁰ cells/ml (dk), 10¹²¹ cells/ml (dl), 10¹²² cells/ml (dm), 10¹²³ cells/ml (dn), 10¹²⁴ cells/ml (do), 10¹²⁵ cells/ml (dp), 10¹²⁶ cells/ml (dq), 10¹²⁷ cells/ml (dr), 10¹²⁸ cells/ml (ds), 10¹²⁹ cells/ml (dt), 10¹³⁰ cells/ml (du), 10¹³¹ cells/ml (dv), 10¹³² cells/ml (dw), 10¹³³ cells/ml (dx), 10¹³⁴ cells/ml (dy), 10¹³⁵ cells/ml (dz), 10¹³⁶ cells/ml (ea), 10¹³⁷ cells/ml (eb), 10¹³⁸ cells/ml (ec), 10¹³⁹ cells/ml (ed), 10¹⁴⁰ cells/ml (ee), 10¹⁴¹ cells/ml (ef), 10¹⁴² cells/ml (eg), 10¹⁴³ cells/ml (eh), 10¹⁴⁴ cells/ml (ei), 10¹⁴⁵ cells/ml (ej), 10¹⁴⁶ cells/ml (ek), 10¹⁴⁷ cells/ml (el), 10¹⁴⁸ cells/ml (em), 10¹⁴⁹ cells/ml (en), 10¹⁵⁰ cells/ml (eo), 10¹⁵¹ cells/ml (ep), 10¹⁵² cells/ml (eq), 10¹⁵³ cells/ml (er), 10¹⁵⁴ cells/ml (es), 10¹⁵⁵ cells/ml (et), 10¹⁵⁶ cells/ml (eu), 10¹⁵⁷ cells/ml (ev), 10¹⁵⁸ cells/ml (ew), 10¹⁵⁹ cells/ml (ex), 10¹⁶⁰ cells/ml (ey), 10¹⁶¹ cells/ml (ez), 10¹⁶² cells/ml (fa), 10¹⁶³ cells/ml (fb), 10¹⁶⁴ cells/ml (fc), 10¹⁶⁵ cells/ml (fd), 10¹⁶⁶ cells/ml (fe), 10¹⁶⁷ cells/ml (ff), 10¹⁶⁸ cells/ml (fg), 10¹⁶⁹ cells/ml (fh), 10¹⁷⁰ cells/ml (fi), 10¹⁷¹ cells/ml (fj), 10¹⁷² cells/ml (fk), 10¹⁷³ cells/ml (fl), 10¹⁷⁴ cells/ml (fm), 10¹⁷⁵ cells/ml (fn), 10¹⁷⁶ cells/ml (fo), 10¹⁷⁷ cells/ml (fp), 10¹⁷⁸ cells/ml (fq), 10¹⁷⁹ cells/ml (fr), 10¹⁸⁰ cells/ml (fs), 10¹⁸¹ cells/ml (ft), 10¹⁸² cells/ml (fu), 10¹⁸³ cells/ml (fv), 10¹⁸⁴ cells/ml (fw), 10¹⁸⁵ cells/ml (fx), 10¹⁸⁶ cells/ml (fy), 10¹⁸⁷ cells/ml (fz), 10¹⁸⁸ cells/ml (ga), 10¹⁸⁹ cells/ml (gb), 10¹⁹⁰ cells/ml (gc), 10¹⁹¹ cells/ml (gd), 10¹⁹² cells/ml (ge), 10¹⁹³ cells/ml (gf), 10¹⁹⁴ cells/ml (gg), 10¹⁹⁵ cells/ml (gh), 10¹⁹⁶ cells/ml (gi), 10¹⁹⁷ cells/ml (gj), 10¹⁹⁸ cells/ml (gk), 10¹⁹⁹ cells/ml (gl), 10²⁰⁰ cells/ml (gm), 10²⁰¹ cells/ml (gn), 10²⁰² cells/ml (go), 10²⁰³ cells/ml (gp), 10²⁰⁴ cells/ml (gq), 10²⁰⁵ cells/ml (gr), 10²⁰⁶ cells/ml (gs), 10²⁰⁷ cells/ml (gt), 10²⁰⁸ cells/ml (gu), 10²⁰⁹ cells/ml (gv), 10²¹⁰ cells/ml (gw), 10²¹¹ cells/ml (gx), 10²¹² cells/ml (gy), 10²¹³ cells/ml (gz), 10²¹⁴ cells/ml (ha), 10²¹⁵ cells/ml (hb), 10²¹⁶ cells/ml (hc), 10²¹⁷ cells/ml (hd), 10²¹⁸ cells/ml (he), 10²¹⁹ cells/ml (hf), 10²²⁰ cells/ml (hg), 10²²¹ cells/ml (hi), 10²²² cells/ml (hj), 10²²³ cells/ml (hk), 10²²⁴ cells/ml (hl), 10²²⁵ cells/ml (hm), 10²²⁶ cells/ml (hn), 10²²⁷ cells/ml (ho), 10²²⁸ cells/ml (hp), 10²²⁹ cells/ml (hq), 10²³⁰ cells/ml (hr), 10²³¹ cells/ml (hs), 10²³² cells/ml (ht), 10²³³ cells/ml (hu), 10²³⁴ cells/ml (hv), 10²³⁵ cells/ml (hw), 10²³⁶ cells/ml (hx), 10²³⁷ cells/ml (hy), 10²³⁸ cells/ml (hz), 10²³⁹ cells/ml (ia), 10²⁴⁰ cells/ml (ib), 10²⁴¹ cells/ml (ic), 10²⁴² cells/ml (id), 10²⁴³ cells/ml (ie), 10²⁴⁴ cells/ml (if), 10²⁴⁵ cells/ml (ig), 10²⁴⁶ cells/ml (ih), 10²⁴⁷ cells/ml (ii), 10²⁴⁸ cells/ml (ij),

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10. A vector comprising the DNA of Claim 2.

11. A host cell comprising the vector of Claim 10.

12. A process for producing a polypeptide comprising: expressing from the host cell of Claim 11 the polypeptide encoded by said DNA.

13. A process for producing a cell which expresses a polypeptide comprising genetically engineering the cell with the vector of Claim 10.

14. A polypeptide comprising a member selected from the group consisting of:

- (a) a polypeptide having an amino acid sequence set forth in SEQ ID NO:2;
- (b) a polypeptide comprising amino acid 1 to amino acid 167 of SEQ ID NO:2; and
- (c) a polypeptide which is at least 70% identical to the polypeptide of (a) or (b).

15. The polypeptide of Claim 14 wherein the polypeptide comprises amino acid -22 to amino acid 167 of SEQ ID NO:2.

16. The polypeptide of Claim 14 wherein the polypeptide comprises amino acid 1 to amino acid 167 of SEQ ID NO:2.

17. A compound which inhibits activation of the polypeptide of claim 14.

18. A compound which activates the polypeptide of claim 14.

19. A method for the treatment of a patient having need of hHSP comprising: administering to the patient a therapeutically effective amount of the polypeptide of claim 14.

20. The method of Claim 19 wherein said therapeutically effective amount of the polypeptide is administered by providing to the patient DNA encoding said polypeptide and expressing said polypeptide *in vivo*.

21. A method for the treatment of a patient having need to inhibit a hHSP polypeptide comprising: administering to the patient a therapeutically effective amount of the compound of Claim 17.

22. A process for diagnosing a disease or a susceptibility to a disease related to an under-

expression of the polypeptide of claim 14 comprising:

determining a mutation in a nucleic acid sequence encoding said polypeptide.

23. A diagnostic process comprising:

analyzing for the presence of the polypeptide of claim 14 in a sample derived from a host.

24. A method for identifying compounds which inhibit or enhance activation of the polypeptide of claim 14 comprising: contacting a cell expressing on the surface thereof a receptor for the polypeptide, said receptor being associated with a second component capable of providing a detectable signal in response to the binding of a compound to said receptor, with an analytically detectable hHSP polypeptide and a compound under conditions to permit binding to the receptor; and

determining whether the compound inhibits or enhances the receptor by detecting the absence of a signal generated from the interaction of the hHSP with the receptor.

25. An isolated antibody or fragment thereof that specifically binds to a protein selected from the group consisting of:

(a) a protein consisting of amino acid residues (-)22 to 167 of SEQ ID NO:2;

(b) a protein consisting of amino acid residues 1 to 167 of SEQ ID NO:2;

(c) a protein consisting of a portion of SEQ ID NO:2, wherein said portion comprises at least 30 contiguous amino acid residues of SEQ ID NO:2; and

(d) a protein consisting of a portion of SEQ ID NO:2, wherein said portion comprises at least 50 contiguous amino acid residues of SEQ ID NO:2.

26. The antibody or fragment thereof of claim 25 that specifically binds protein (a).

27. The antibody or fragment thereof of claim 25 that specifically binds protein (b).

28. The antibody or fragment thereof of claim 25 that specifically binds protein (c).

29. The antibody or fragment thereof of claim 25 that specifically binds protein (d).

30. The antibody or fragment thereof of claim 26 that specifically binds protein (b).

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31. The antibody or fragment thereof of claim 27 wherein said protein bound by said antibody or fragment thereof is glycosylated.

32. The antibody or fragment thereof of claim 27 which is a human antibody.

33. The antibody or fragment thereof of claim 27 which is a polyclonal antibody.

34. The antibody or fragment thereof of claim 27 which is a monoclonal antibody.

35. The antibody or fragment thereof of claim 27 which is selected from the group consisting of:

- (a) a chimeric antibody;
- (b) a humanized antibody;
- (c) a single chain antibody;
- (d) a Fab fragment;

36. The antibody or fragment thereof of claim 27 which is labeled.

37. The antibody of claim 36 wherein the label is selected from the group consisting of:

- (a) an enzyme;
- (b) a fluorescent label; and
- (c) a radioisotope.

38. The antibody or fragment thereof of claim 27 wherein said antibody specifically binds to said protein in a Western blot.

39. The antibody or fragment thereof of claim 27 wherein said antibody specifically binds to said protein in an ELISA.

40. An isolated cell that produces the antibody or fragment thereof of claim 27.

41. A hybridoma that produces the antibody or fragment thereof of claim 27.

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42. A method of detecting hHSP protein in a biological sample comprising:

(a) contacting a biological sample with the antibody or fragment thereof of claim 27; and

(b) detecting the hHSP protein in the biological sample.

43. The method of claim 42 wherein the antibody or fragment thereof is a polyclonal antibody.

44. An isolated antibody or fragment thereof obtained from an animal that has been immunized with a protein selected from the group consisting of:

(a) a protein comprising the amino acid sequence of amino acid residues (-)22 to 167 of SEQ ID NO:2;

(b) a protein comprising the amino acid sequence of amino acid residues 1 to 167 of SEQ ID NO:2;

(c) a protein comprising the amino acid sequence of at least 30 contiguous amino acid residues of SEQ ID NO:2; and

(d) a protein comprising the amino acid sequence of at least 50 contiguous amino acid residues of SEQ ID NO:2;

wherein said antibody or fragment thereof specifically binds to said amino acid sequence.

45. The antibody or fragment thereof of claim 44 obtained from an animal immunized with protein (a).

46. The antibody or fragment thereof of claim 44 obtained from an animal immunized with protein (b).

47. The antibody or fragment thereof of claim 44 obtained from an animal immunized with protein (c).

48. The antibody or fragment thereof of claim 44 obtained from an animal immunized with protein (d).

49. The antibody or fragment thereof of claim 44 which is a monoclonal antibody.

50. The antibody or portion thereof of claim 44 which is selected from the group consisting of:

- (a) a chimeric antibody;
- (b) a polyclonal antibody;
- (c) a humanized antibody;
- (d) a single chain antibody; and
- (e) a Fab fragment.

51. An isolated antibody or fragment thereof that specifically binds to a protein selected from the group consisting of:

(a) a protein consisting of the full-length polypeptide encoded by the cDNA contained in ATCC Deposit Number 97455;

(b) a protein consisting of the mature form of the polypeptide encoded by the cDNA contained in ATCC Deposit Number 97455;

(c) a protein consisting of a portion of the polypeptide encoded by the cDNA contained in ATCC Deposit Number 97455, wherein said portion comprises at least 30 contiguous amino acid residues of the polypeptide encoded by the cDNA contained in ATCC Deposit Number 97455; and

(d) a protein consisting of a portion of the polypeptide encoded by the cDNA contained in ATCC Deposit Number 97455, wherein said portion comprises at least 50 contiguous amino acid residues of the polypeptide encoded by the cDNA contained in ATCC Deposit Number 97455.

52. The antibody or fragment thereof of claim 51 that specifically binds protein (a).

53. The antibody or fragment thereof of claim 51 that specifically binds protein (b).

54. The antibody or fragment thereof of claim 51 that specifically binds protein (c).

55. The antibody or fragment thereof of claim 51 that specifically binds protein (d).

56. The antibody or fragment thereof of claim 52 that specifically binds protein (b).

57. The antibody or fragment thereof of claim 53 wherein said protein bound by said antibody or fragment thereof is glycosylated.

58. The antibody or fragment thereof of claim 53 which is a human antibody.

59. The antibody or fragment thereof of claim 53 which is a polyclonal antibody.

60. The antibody or fragment thereof of claim 53 which is a monoclonal antibody.

61. The antibody or fragment thereof of claim 53 which is selected from the group consisting of:

- (a) a chimeric antibody;
- (b) a humanized antibody;
- (c) a single chain antibody; and
- (d) a Fab fragment.

62. The antibody or fragment thereof of claim 53 which is labeled.

63. The antibody of claim 62 wherein the label is selected from the group consisting of:

- (a) an enzyme;
- (b) a fluorescent label; and
- (c) a radioisotope label.

64. The antibody or fragment thereof of claim 53 wherein said antibody specifically binds to said protein in a Western blot.

65. The antibody or fragment thereof of claim 53 wherein said antibody specifically binds to said protein in an ELISA.

66. An isolated cell that produces the antibody or fragment thereof of claim 53.

67. A hybridoma that produces the antibody or fragment thereof of claim 53.

68. A method of detecting hHSP protein in a biological sample comprising:

- (a) contacting a biological sample with the antibody or fragment thereof of claim 53; and
- (b) detecting the hHSP protein in the biological sample.

69. The method of claim 68 wherein the antibody or fragment thereof is a polyclonal antibody.

70. An isolated antibody or fragment thereof obtained from an animal that has been immunized with a protein selected from the group consisting of:

- (a) a protein comprising the amino acid sequence of the full-length polypeptide encoded by the cDNA contained in ATCC Deposit Number 97455;
- (b) a protein comprising the amino acid sequence of the mature form of the polypeptide encoded by the cDNA contained in ATCC Deposit Number 97455;
- (c) a protein comprising the amino acid sequence of at least 30 contiguous amino acid residues of the polypeptide encoded by the cDNA contained in ATCC Deposit Number 97455; and
- (d) a protein comprising the amino acid sequence of at least 50 contiguous amino acid residues the polypeptide encoded by the cDNA contained in ATCC Deposit Number 97455;

wherein said antibody or fragment thereof specifically binds to said amino acid sequence.

71. The antibody or fragment thereof of claim 70 obtained from an animal immunized with protein (a).

72. The antibody or fragment thereof of claim 70 obtained from an animal immunized with protein (b).

73. The antibody or fragment thereof of claim 70 obtained from an animal immunized with protein (c).

74. The antibody or fragment thereof of claim 70 obtained from an animal immunized with protein (d).

75. The antibody or fragment thereof of claim 70 which is a monoclonal antibody.

76. The antibody or portion thereof of claim 70 which is selected from the group consisting of:

- (a) a chimeric antibody;

- (b) a polyclonal antibody;
- (c) a humanized antibody;
- (d) a single chain antibody; and
- (e) a Fab fragment.

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